



CATT

Fiscal Year 2020 Report

USDA Forest Service
Southern Research Station
Center for Aquatic Technology Transfer (CATT)

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Fiscal Year 2020 Executive Summary

Fiscal Year 2020 won't soon be forgotten. We began the year by saying good-bye to a long-time colleague and CATT advocate, Regional Fisheries Program Manager, Leigh McDougal. Leigh recognized early in her tenure the valuable link CATT provided between managers and researchers, and we experienced significant growth and diversification of our program under her leadership. Southern Region Aquatic Ecologist Kevin Leftwich both continued his role with CATT and assumed Leigh's duties early in FY20. At mid-year, we welcomed Leigh's replacement Amy Carson as she joined the BPR Team in Atlanta as the Regional Fisheries Program Manager. We are excited by Amy's selection and together we look forward to the many opportunities we will have to maximize the value of CATT in FY21 and beyond.

Of course, by far the most significant event of 2020 was the pandemic. COVID-19 severely impacted our field operations throughout the majority of FY20. Beginning in March, we paused all field work for several months. During the pause we kept our team members busy working on data QA/QC, updating field manuals, and developing a new data collection tool. We also developed COVID safety plans in collaboration with our internal and external partners so we could hit the ground running when we returned to the field, which happened in July. We started small and cautiously, focusing on high priority, relatively local projects that posed minimal risk to the health and safety of our crews and partners. Despite the COVID-related limitations and delays we provided several partners (details in the following pages) with the information and tools they need to and increase the pace and scale of forest restoration, make informed management decisions, and connect people to the outdoors.

What is CATT?

The Center for Aquatic Technology Transfer (CATT) is a science delivery program. CATT biologists and technicians are Southern Research Station (SRS) employees funded by the National Forest System (NFS) and other partners. Guided by core values of communication, partnership, inclusion, accountability, and safety, we collaborate with the Forest Service science community and others to develop custom solutions for our project partners.

When was CATT created, and why?

The CATT was created in 1995 in response to the growing need for research technologies to be applied directly to management challenges. The number of research personnel was, and still is, too small relative to the number of fisheries and aquatics resource managers to satisfy specific needs. Our mission is to increase the capacity of our partners through delivery of science-based support.

Where does CATT work?

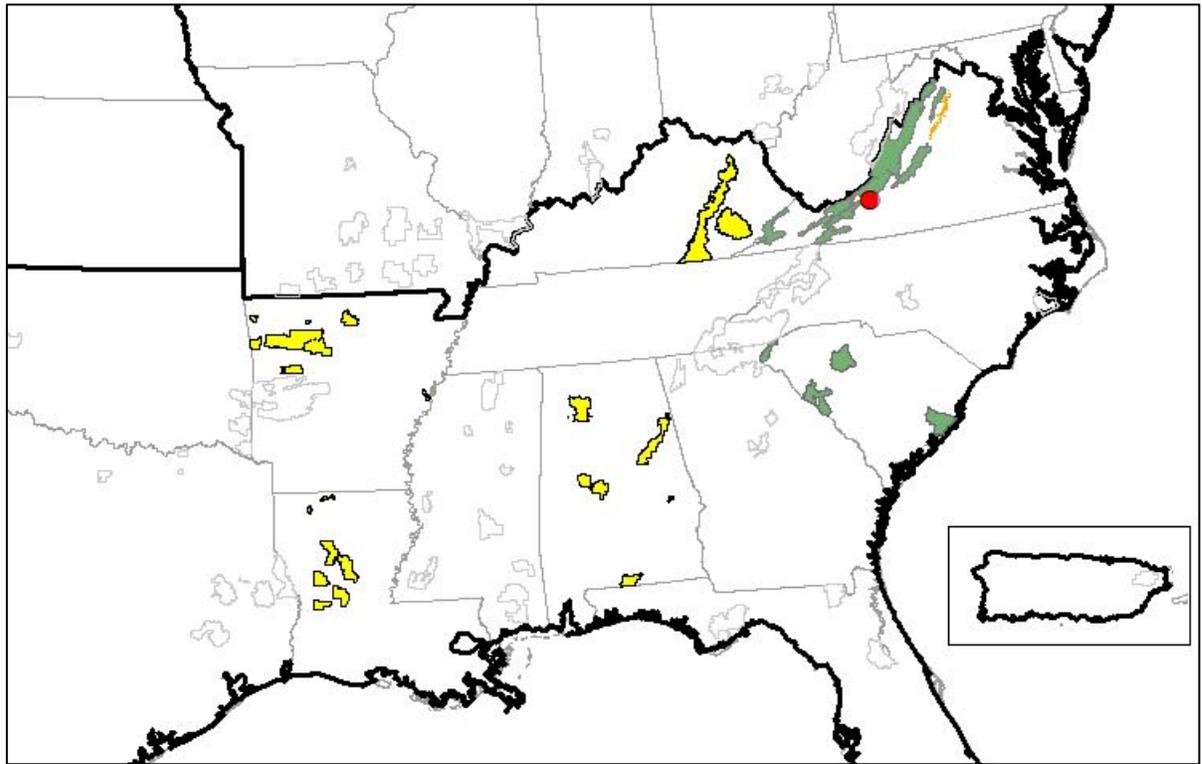
Full-time CATT personnel are stationed in Blacksburg, VA and provide services throughout the U.S.

What services does CATT provide?

Our focus is on aquatics related management challenges. Our flexible organizational structure allows us to rapidly develop and apply custom solutions to both short and long term projects. Past projects range from providing a field technician for an afternoon of fish sampling, to region-wide, multi-year efforts, including sampling design, personnel management, data analysis, and reporting.

How can I learn more about CATT?

Contact Craig Roghair 540 230-8126 (craig.n.roghair@usda.gov), or visit our website: <http://www.srs.fs.usda.gov/catt>.



CATT field teams were able to complete projects on two national forests (green) and a national park (orange) in fiscal year 2020. Projects on several national forests (yellow) were postponed due to COVID precautions. The USDA-FS, SRS CATT is headquartered in Blacksburg, VA (red circle).

FY 2020 CATT field projects.

Partner	Project Type
Francis Marion & Sumter National Forests	Stream fish and habitat inventory
George Washington & Jefferson National Forests	Freshwater snorkeling education program
George Washington & Jefferson National Forests	Stream channel classification
Rocky Mountain Research Station	Environmental DNA (eDNA) sampling in Virginia
Shenandoah National Park	Brook Trout population estimates
Southern Region (R8) Regional Office	Provide base funding and support for the CATT
Southern Research Station	Movement of wood in streams

FY 2020 projects postponed or cancelled due to COVID.

Partner	Project Type
Daniel Boone National Forest	Mine impacts on stream health
Francis Marion & Sumter National Forests	Stream fish and habitat inventory
Francis Marion & Sumter National Forests	Freshwater snorkeling education program
George Washington & Jefferson National Forests	Freshwater snorkeling education program
Kisatchie National Forest	Forest-wide stream monitoring
National Forests in Alabama	Blue Shiner monitoring
Ozark–St. Francis National Forest	Stream fish and habitat inventory
Shenandoah National Park	Brook Trout population estimates
Southern Research Station	American Eel growth and movement

Francis Marion & Sumter National Forests

Francis Marion District

Project Type

Stream fish and habitat inventory

Goal

Provide stream biota and habitat information needed for project-level and Forest-level planning

Objective

Complete stream fish and habitat inventory in November 2019

Approach

Forest identifies streams with gaps in fish or habitat information
The CATT trains and deploys field teams to complete inventories
The CATT provides project database for incorporation into forest datasets

Accomplishments

Completed 16 miles of habitat inventory on 22 streams
Sampled fish in 6 streams at a total of 12 sites
Entered data into project database and provided to project partner

Partners and Contacts

Forest Contact: Keith Whalen, Forest Fisheries Biologist



Electrofishing in Cane Gully Branch



Habitat inventory of Island Branch

Project Summary

Periodic aquatic resource assessments provide the information national forest managers need to effectively identify current status and trends, management options and impacts, and threats and impacts of fire, insects, disease, and other natural processes on aquatic resources. In 2019, Francis Marion National Forest partnered with the CATT to assess stream habitat and fish in high-priority management areas, the latest effort in a long history of inventory and monitoring partnerships on the forest. Our current effort is intended to fill data gaps and update aquatic resource information needed for forest- and project-level analyses. We will return to the Sumter in 2021 to continue stream assessments in high priority watersheds identified by the Francis Marion National Forest.

Francis Marion & Sumter National Forests

Andrew Pickens District

Project Type

Stream fish and habitat inventory

Goal

Provide stream biota and habitat information needed for project-level and Forest-level planning

Objective

Complete stream fish and habitat inventory in March 2020

Approach

Forest identifies streams with gaps in fish or habitat information
The CATT trains and deploys field teams to complete inventories
The CATT provides project database for incorporation into Forest datasets

Accomplishments

Completed 10.7 miles of habitat inventory on 5 streams
Sampled fish in 5 streams at a total of 22 sites
Entered data into project database and provided to project partner

Partners and Contacts

Forest Contact: Keith Whalen, Forest Fisheries Biologist



Waterfall encountered on Crane Creek



Large wood is classified and recorded

Project Summary

Periodic aquatic resource assessments provide the information National Forest managers need to effectively identify current status and trends, management options and impacts, and threats and impacts of fire, insects, disease, and other natural processes on aquatic resources. In 2020, Sumter National Forest partnered with the CATT to assess stream habitat and fish in high-priority management areas, the latest effort in a long history of inventory and monitoring partnerships on the Forest. Our current effort is intended to fill data gaps and update aquatic resource information needed for Forest- and project-level analyses. We will return to the Andrew Pickens as requested to continue stream assessments in high priority watersheds identified by the Francis Marion National Forest.

George Washington & Jefferson National Forests Lee Ranger District

Project Type

Freshwater snorkeling education program

Goal

Connect participants to nature by immersing them in streams and rivers

Objectives

Host a 4-day snorkeling program on Passage Creek in October 2019

Approach

Forest staff, CATT, and Friends of the Shenandoah River select appropriate snorkeling sites

National Park Trust contacts schools and arranges for bus transportation

CATT hires, trains, deploys snorkeling education team to implement snorkeling program

CATT, Forest staff, WO staff, partners host a series of snorkeling events

Accomplishments

Identified a safe and suitable snorkeling location

Hosted 128 students from 4 Washington DC schools

Identified partners to take the lead on future programs

Partners and Contacts

Partners: Friends of the Shenandoah River, National Park Trust, NorthBay Foundation, Audubon Society;

Forest Contact: Dawn Kirk, Forest Fisheries Biologist; Pauline Adams, Forest Hydrologist



Learning the fish species seen while snorkeling



Collecting macroinvertebrates

Project Summary

Connecting people to the outdoors is an increasingly important and challenging part of the Forest Service mission. Snorkeling education programs are an innovative and effective way to connect people to the outdoors, engage partners in impactful outreach programs, and deliver conservation messages through a nature immersion experience. For a second consecutive year we worked with the GWJNF and several partners to host multiple freshwater snorkeling events. Grade school and middle school students from Washington DC donned wetsuits, masks, and snorkels to view fish and aquatic insects in their natural habitats. Their observations formed a foundation for discussing the roles of individuals, communities, and agencies in maintaining healthy watersheds that produce abundant, clean water. Given the positive feedback their program received, the Forest anticipates hosting additional snorkeling events soon.

George Washington & Jefferson National Forests

Clinch, James River, Lee, Mount Rogers, and Glenwood-Pedlar Ranger Districts

Project Type

Stream channel classification

Goal

Provide information needed to provide adequate stream channel protection in timber management units

Objective

Classify stream channels in timber management units in October 2019 – September 2020

Approach

Forest provides list of timber units with pending harvest

CATT works with forest and districts staffs to develop standardized classification system

CATT deploys field teams to classify stream channel

CATT supplies project GIS to forest

Accomplishments

Classified stream channels in 324 timber stand sale units across 5 districts

Submitted maps of classifications to district and forest personnel

Partners and Contacts

Forest Contacts: Dawn Kirk, Forest Fisheries Biologist; Pauline Adams, Forest Hydrologist



Assessing riparian characteristics



Classifying a headwater channel

Project Summary

Functioning riparian areas are important in all aquatic habitats. The George Washington and Jefferson National Forest seeks to retain, restore, or enhance ecological and physical processes and functions of riparian areas along all perennial, intermittent, and ephemeral streams and wetlands by identifying, classifying, and delineating all stream channels within the project areas of timber management units. Central to this goal is the ability to accurately and efficiently identify perennial, intermittent, and channeled ephemeral streams. The forest has partnered with the CATT to develop and apply a standardized approach for stream channel classification. We developed a field guide to channel classification and then hired, trained, and deployed field teams to classify channels in timber management units across the George Washington and Jefferson National Forests. The Forest uses the classifications to lay out Riparian Corridors and Channeled Ephemeral Zones in timber management units, as prescribed in the forest plan.

Rocky Mountain Research Station National Genomics Center for Wildlife and Fish Conservation

Project Type

Environmental DNA (eDNA) sampling in Virginia trout streams

Goal

Collect eDNA samples to fill gaps in trout distributions in Virginia streams

Objective

In July-September 2020 collect eDNA samples from historically cold-water streams capable of supporting Brook Trout populations

Approach

National Genomics Center identifies sample sites on cold water streams in Virginia

The CATT trains and deploys field teams to complete eDNA sample collection

The CATT provides eDNA samples and meta-data to the National Genomics Center for analysis

National Genomics Center posts results in webmap

Accomplishments

Collected samples at 210 sites from 67 streams on public and private lands in Virginia

Submitted samples to the National Genomics Center staff for analysis

Partners and Contacts

Forest Contacts: Ashley Walters, Wildlife Biologist; Thomas Franklin, eDNA Program Leader; Jennifer Hernandez, eDNA Program Coordinator; Steve Reeser, VA DWR, Dawn Kirk, GWJNF Forest Fisheries Biologist



eDNA sample collection in the Pigg River



Connecting the filter pump battery at Big Branch

Project Summary

We used established water filtering protocols to collect eDNA (DNA that is released naturally by an organism into its environment) from stream water. The National Genomics Center, Virginia Department of Wildlife Resources, and the GWJNF seek to use eDNA detections on national forest, state, and private lands to better understand the current distribution of Brook Trout populations in Virginia. Brook Trout presence is generally correlated with clean, cold water stream. Our results can be compared with both past and future Brook Trout distributions to document changes in habitat quality and to guide restoration efforts. Our results will be posted in the online eDNA atlas at: <https://www.fs.usda.gov/rmrs/ngc/edna>.

Shenandoah National Park National Park Service

Project Type

Brook Trout population monitoring

Goal

Use long-term population monitoring to better inform Brook Trout management

Objective

Complete annual population estimates on 2 long-term study streams in October 2019
Incorporate results into 27-year dataset

Approach

Southern Research Station establishes long-term monitoring study in 1993
Shenandoah National Park supplies research and sampling permits
CATT provides personnel and organizes volunteers to support annual sampling efforts
Southern Research Station produces presentations, reports, papers based on results

Accomplishments

Completed population estimates on 2 long-term study streams
Data are incorporated into project database

Partners

Partner: Shenandoah National Park; Forest Service Contact: Dr. Andy Dolloff, Southern Research Station



Snorkeling to count fish



Measuring a Brook Trout

Project Summary

Long term studies allow researchers to describe trends that may not be evident from shorter studies. Since 1993, the Southern Research Station has conducted annual surveys using a combination of diver counts, backpack electrofishing, and fish tagging to estimate the distribution, abundance, and growth of Brook Trout and other coldwater fishes in two Shenandoah National Park streams. The CATT has provided field support for the project since 1995 and maintains the project database. We are examining the role that environmental factors such as acid precipitation, floods, droughts, water temperature, and invasive species may have on Brook Trout populations. Understanding such effects allows resource specialists to more effectively manage Brook Trout and other coldwater fish populations.

Southern Research Station Research Work Unit 4353, Blacksburg, VA

Project Type

Movement of wood in streams

Goal

Monitor long-term movement of wood in small trout streams to better inform watershed management

Objective

Locate marked logs in June 2020 and incorporate location information into 27-year dataset

Approach

Southern Research Station designs and implements log movement study in 1993

Jefferson National Forest provides personnel to place logs into streams in 1993

CATT provides personnel annually to document changes in log location

CATT updates long-term dataset

Accomplishments

Located 150 study logs in 2 long-term study stream reaches

Incorporated data into long-term dataset

Partners and Contacts

Forest Service Contacts: Andy Dolloff, Southern Research Station; Dawn Kirk, Forest Fisheries Biologist



Documenting movement of wood



Searching for a marked piece of wood

Project Summary

Trees that fall in streams increase the amount of food and shelter available to animals living in and near the water, but also can cause damage to roads and other structures if they move during floods. Resource managers may be asked to remove wood from streams as a preemptive measure against property damage. A better understanding of the mobility of wood in mountain streams is needed to inform managers faced with the decision between retaining wood to improve stream quality or removing wood from streams to protect nearby infrastructure. In 1993, the Southern Research Station began to study wood movement in two mountain streams. Large logs were purposely added to streams and their location was recorded. The CATT has surveyed the logs for movement each year since 1994 and maintains the project database. Log movement information is updated annually is incorporated into presentations to resource managers tasked with managing wood in streams.

USFS Southern Region (R8) Regional Office (RO)

Project Type

Base funding, coordination, and support for the CATT

Goal

Provide science-based support to national forests in the Southern Region to address aquatic-related management challenges

Objective

Support 2 CATT biologists to work on projects throughout R8 in 2019

Approach

Regional Office provides support for 2 full-time CATT biologists
Southern Research Station provides CATT facility and administrative support
National forests, RO, or other partners request CATT services
CATT works with partners to develop and implement custom solutions

Accomplishments

Partnered with 6 National Forests in R8 on 5 field projects
Postponed 8 projects on 6 Forests; projects will be completed in 2021
Partnered with Virginia Tech to hire, train, and deploy up to 5 field technicians
Shared project information through reports, webinars and at local, state, and national meetings

Partners and Contacts

Partner: Virginia Tech; Forest Service Contacts: Amy Carson, Regional Fish Program Manager; Kevin Leftwich, Regional Aquatic Ecologist; Gretta Boley, Director, R8 Biological and Physical Resources; Andy Dolloff, Southern Research Station



Planning a stream inventory with NFS personnel



Presenting project results to forest staff

Project Summary

Managing for abundant clean water and resilient watersheds on National Forests in the Southern Region is an increasingly complex and important goal. To meet this challenge National Forests require science-based solutions delivered in a timely manner. The base funding provided for the CATT program through the Southern Region Regional Office allows us to address this need. Base funds are used to support a small workforce that provides a direct connection between the National Forest System and Forest Service Research & Development. From this base we leverage funding from other partners to build a flexible workforce that provides a variety of on-demand services throughout the Region. Our partnership with the Regional Office ensures that we will be well positioned to meet the needs of National Forests in Region 8.